

# HYPOXIS ERECTA LINN.

## A BIBLIOGRAPHICAL STUDY.

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(WITH PLATE XI)

SOME of the numerous synonyms which have arisen from the first to the second edition of Linnæus' *Species plantarum*, and which have become a necessity to the systematic botanist to understand and recognize, appear at first glance to be rather surprising, and are well worth submitting to a closer investigation. The transferring of a generic name from one genus to another is not uncommon in the Linnean publications, but there seems to have been, at least in some cases, a good reason, if not excuse, for making a change of this kind. From a bibliographical point of view, it is often quite interesting and instructive to investigate some of these changes, and the writer has had in the present case a certain inducement for trying to discover the reason which led Linnæus to describe our amaryllidaceous genus *Hypoxis* at first as an *Ornithogalum*.

No critical or conscientious botanist should accuse Linnæus, however, of having overlooked so important a character as the position of the ovary, which is superior in *Ornithogalum* and inferior in *Hypoxis*. Linnæus was too well acquainted with such primary characters, and it was due, therefore, not so much to his own defective observation as to the misleading descriptions of previous authors, whose works were the only ones accessible to Linnæus at the time when he wrote his first edition of the *Species plantarum*. It is absolutely necessary, therefore, to admit a distinction between Linnean synonyms and *nomina nuda*, when a Linnean change of name is to be verified. The fact is that the name *Ornithogalum hirsutum*, which appears in the first edition of *Species plantarum* (p. 306), was rejected by Linnæus himself

in the second edition of the same work, and simply used as a quotation for what he had thought to be a well distinguished species of *Ornithogalum*, instead of being a combination of two different genera. It is beyond any doubt, therefore, that Linnæus really once intended the name *Ornithogalum hirsutum* for our *Hypoxis erecta*, but his knowledge of this plant was largely, if not exclusively, based upon defective descriptions and illustrations given by earlier authors.

In order to present the Linnean quotations as complete as possible, I have thought it best to reprint here the diagnoses of the first three species of *Ornithogalum*, especially as the first edition of *Species plantarum* has become a very rare book. The Linnean diagnoses read as follows :

*Ornithogalum.*

luteum 1. *Ornithogalum* scapo anguloso diphylo, pedunculis umbellatis simplicibus. Fl. suec. 270.

*Ornithogalum* scapo diphylo, pedunculis simplicibus terminalibus, filamentis omnibus subulatis. Hort. Cliff. 124. Roy. lugdb. 31.

*Ornithogalum* luteum. Bauh. pin. 71.

*Pyrrhochiton* Reneal. spec. 91. t. 90.

Habitat in Europæ cultis macellis.

minimum 2. *Ornithogalum* scapo angulato diphylo, pedunculis umbellatis ramosis. Fl. suec. 271.

*Ornithogalum* luteum minus. Bauh. pin. 71.

*Hypoxis* Reneal. spec. 92.

Habitat in Europæ cultis oleraceis.

hirsutum 3. *Ornithogalum* scapo angulato, pedunculis umbellatis villosis.

*Ornithogalum* scapo bifloro. Roy. lugdb. 31.

*Ornithogalum* virginianum luteum. Pet. gaz. I. t. I. f. 3.

*Ornithogalum* luteum parvum virginianum, foliis gramineis hirsutis. Pluk. alm. 272. t. 350. f. 12.

*Ornithogalum* vernum luteum, foliis angustis hirsutis. Gron. Virg. 37. Habitat in Virginia, Canada.

Spec. 1. 2. 3. maxime affines sunt.

This last remark certainly indicates that Linnæus did not suspect *Ornithogalum hirsutum* to be generically distinct from the two other plants. His knowledge of the American plant must have been very imperfect at that time, and the descriptions given

by previous authors do not differ in any respect so as to leave a doubt concerning the true relationship of our plant. They all agree in naming it *Ornithogalum*, even Gronovius, who undoubtedly was in possession of specimens from Clayton, who had collected the plant in Virginia.

If we compare the various quotations given above by Linnæus, we will obtain a good idea as to how much knowledge the old authors possessed of the genus *Ornithogalum*. The two species enumerated by Linnæus as nos. 1 and 2 were transferred later by Salisbury to his new genus *Gagea* (p. 553),<sup>1</sup> since these showed a very marked difference from the true species of *Ornithogalum*. We even notice that Reneaulme (pp. 91 and 92) did not consider these two species as belonging to *Ornithogalum*, since he gave them the generic names *Pyrrhochiton* and *Hypoxis*, the first of these containing *O. luteum*, the second *O. minimum*. The quotation "Pet. gaz. I. t. I. f. 3" should have been f. 11, since f. 3 represents a *Chiton*, and f. 11 on the same plate represents our *Hypoxis erecta*. The description<sup>2</sup> reads as follows: "*Ornithogalum* Virginianum luteum, foliis gramineis hirsutis nobis." "Its hairy grasslike leaves distinguish it," and the plant is said to be "common in Carolina, Maryland and Virginia."

Petiver, from whom these quotations are taken, quotes again Ray, who evidently was the first author to publish a description of our *Hypoxis* as "*Ornithogalum* luteum parvum foliis gramineis hirsutis." This description (2: 1928) was not given, however, by Ray himself, but by Banister, who had sent a catalogue to Ray, wherein he enumerated and described such plants as he had observed in Virginia.

Another old citation is that of Plukenet (*Alm. bot. mantissa*, 272), who like Petiver figures the plant. Comparing these two figures with each other (*pl. XI*), it is evident that they were both intended to represent *Hypoxis erecta*, but the principal characters, inferior ovary and short stamens, have not been figured

<sup>1</sup> The references are to books enumerated under "Bibliography" at the end of this paper.

<sup>2</sup> PETIVER: Decas prima I: *pl. 1, fig. 11*.

correctly. Plukenet even figures a small calyx besides a 6-leaved corolla, and he has also indicated the presence of small bulblets at the base of the main bulb, as in *Gagea*, but which do not occur in *Hypoxis*. Plukenet, no doubt, made his figure from a poorly preserved specimen of *Hypoxis*, and he changed certain parts in order to make the drawing fit into the genus *Ornithogalum*. Plukenet's diagnosis in *Almagestum botanici mantissa* (p. 272) is given as follows:

"*Ornithogalum* Virginianum floribus luteis, atra macula insignitis, summo caule veluti in umbellam diffusis."

No "atra macula," however, is to be observed in the flowers of *Hypoxis* or *Ornithogalum*. We might note here, in order to give some idea of Plukenet's comprehension of *Ornithogalum*, that this author in his *Phytographia* (pl. 102, fig. 3) figures another species of *Ornithogalum*:

"*Ornithogalum* affinis Virginiano, flore purpureo pentapetaloide. Banist. Cat. Msc."

This, however, represents *Claytonia Virginica*! These two figures, given by Plukenet and Petiver, seem to have been the only ones which at that time were known to Linnæus, although a third was then in existence in Dillenius' *Horti Elthamensis plantarum*, Linnæus does not seem to have known this figure (pl. 220) until he published the second edition of *Species plantarum*, wherein he gives the full quotation from Dillenius: "*Ornithogalum* Virginici facie, herba tuberosa Carolinesis," a plant which Linnæus named *Hypoxis sessilis*."

This plant does not differ, however, from *H. erecta*, excepting that the flowers are situated close to the ground. It is to be noted that in this figure the details of the flower are very well shown, and there is no doubt that if Linnæus had seen this figure when he first wrote the *Species plantarum*, he would have been able to discover the mistakes in Plukenet's and Petiver's two figures, and he would perhaps at that time have referred our plant to *Hypoxis* instead of to *Ornithogalum*.

The remaining Linnean quotation is that of Royen (p. 31) which is too short and incomplete, however, to give any idea of

the genus Hypoxis. It is also very doubtful whether Royen really had this plant in cultivation in the botanical garden at Leyden as early as 1740, since it has been stated that Hypoxis was not cultivated in Europe until 1752, and, as far as can be ascertained, first in England. These four citations of the works by Plukenet, Petiver, Royen, and Gronovius constituted, therefore, the only literary sources to which Linnæus had access at the time of his writing the first edition of *Species plantarum*, at least so far as concerns *Ornithogalum hirsutum*. The two preceding species, *O. luteum* and *O. minimum*, were both well known to him, as he cites these from his own works (*Flora suecica* 96, and *Hortus Cliffortianus* 124). He also quotes Bauhin's *Ornithogalum luteum* and *O. luteum minus* as synonyms of his *O. luteum* and *O. minimum*, now known as *Gagea lutea* and *G. minima*. There is, therefore, some reason to believe that Linnæus had not seen Hypoxis, either in a living or dried state, and that his first specific diagnosis, so closely resembling those which he quotes, must have been merely transcribed from them with help from the illustrations before him, which did not indicate the inferior ovary and short stamens of Hypoxis. None of the descriptions with which he was acquainted differed in any essential respect from each other, or from the general understanding at that time of the genus *Ornithogalum*. The diagnosis in Gronovius (p. 37) was very likely the most influential with Linnæus, so far as the relationship of the plant was concerned.

The name *Ornithogalum* has an old history, and may be traced far back to the Greeks and Romans. Both Dioscorides (p. 541) and Plinius (21: chap. 62) mention an *Ornithogalum* with edible bulbs, but it is far from certain that their plant was identical with the genus which now bears that name. Among the earliest authors who unmistakably described not only *Ornithogalum* but also *Gagea* may be mentioned Fuchs, who has illustrated and described "Bulbus sylvestris" or "Oignon sauluaige" (p. 95); Lobelius (p. 72), who figures the same species of *Gagea* as *Ornithogalum luteum*, besides the true *O. umbellatum*, under the name "*O. Leucanthemus minor*," which is also described by

Dodonæus (p. 221) as "Bulbus Leucanthemus minor;" and Clusius (p. 188), who has described and figured *Gagea lutea* as "*O. pallido flore*," and another species of *Gagea* as "*O. Pannonicum luteo flore*." The Dillenian genus *Stellaris* (Cat. plant. 110) indicates the first distinction between the true species of *Ornithogalum* and those which Salisbury referred to his *Gagea*.

It appears, according to the above statements, that the European genus *Ornithogalum*, including *Gagea*, was very well distinguished before Linnæus undertook to write his *Genera* and *Species plantarum*. The rather superficial, but nevertheless quite striking, similarity between the small yellow-flowered species of *Gagea* (*Ornithogalum* of Linnæus) and the American *Hypoxis* made several authors from Ray to Gronovius confound these, so as to consider them all as belonging to *Ornithogalum*, until Linnæus himself was led to make the same mistake. Linnæus, however, corrected the mistake in the second edition of his *Species plantarum*, and his characterization of *Hypoxis* in *Systema vegetabilium*, "*Hypoxis corolla supera*," is sufficient to prove that he had obtained material finally for a correct description of the plant, inasmuch as he changed the formerly given specific name *hirsutum* to *erecta* (*Sp. pl.* 2d ed. 439). As a matter of fact, *Hypoxis erecta* is not "hirsute," but "pilose," as Linnæus later on described it. That he named it *erecta* was evidently to distinguish it from the related species *decumbens*, *sessilis*, *sobolifera*, etc., all of which are hairy; while the former specific name, *hirsutum*, would have distinguished it at once from the species of *Ornithogalum*, of which only a few are slightly pubescent. Furthermore, that Linnæus had not seen the plant in a living state, not even when he wrote the sixth edition of his *Genera plantarum* (1764), is evident from his marking the genus with a cross, which according to his preface means: *Crucem ubi siccas solum habere potui!* The plant *Hypoxis*, as stated above, was not cultivated in Europe until the year 1752, and very likely first in England. It seems, therefore, according to the preceding statements, that Linnæus had no direct knowledge of *Hypoxis* until he published his second edition of *Species planta-*

*rum*, and that his first treatment of the genus as an *Ornithogalum* was due to the defective diagnoses and illustrations given by his predecessors. The name *Ornithogalum hirsutum*, therefore, is a *nomen nudum*, and Linnæus should certainly not have been obliged to preserve the specific name *hirsutum* because he changed the generic. His own observation of the dried specimens, when he finally received these, showed him his mistake as to the genus and as to the character "hirsute," which is only too evident from his renewed characterization of the species as "pilose." It is evident, therefore, that *H. erecta* L. should not be set aside for *H. hirsuta* (L.) Coville.

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#### EXPLANATION OF PLATE XI.

FIG. 1. A photographic reproduction of Plukenet's figure of *Hypoxis erecta* L.

FIG. 2. A similar reproduction, but reduced one-half, from Petiver's illustration of the same plant.